

1 **DIRECT TESTIMONY OF**
2 **BURTON G. MALKIEL**
3 **ON BEHALF OF**
4 **SOUTH CAROLINA ELECTRIC AND GAS COMPANY**
5 **DOCKET NO. 2002-223-E**
6

7 **Q. PLEASE STATE YOUR NAME, BUSINESS ADDRESS, OCCUPATION, AND**
8 **AREAS OF SPECIAL EXPERTISE.**

9 A. My name is Burton G. Malkiel and my business address is Bendheim Center
10 for Finance, Princeton University, Princeton, N.J. 08544-1021. I am Chemical Bank
11 Chairman's Professor of Economics at Princeton University. My special fields of
12 research, writing, teaching and expertise are financial markets, corporate finance and
13 investments.

14
15 **Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND**
16 **PROFESSIONAL EXPERIENCE.**

17 A. I received my B.A. degree in Economics from Harvard University in 1953. In
18 1955, I received a Masters of Business Administration from the Harvard Graduate
19 School of Business Administration with a major in Finance. After serving as an
20 officer in the United States Army Finance Corps and after some years as a trader in
21 equity securities and as an investment banker with Smith, Barney and Company in
22 New York, I received my Ph.D. from Princeton University in 1964 in Economics and
23 Finance.

1 From 1964 to 1981, I was a professor of Economics at Princeton. I was the
2 Director of the Financial Research Center at Princeton from 1966 to 1981. From
3 1975 to 1977, I served as a member of the Council of Economic Advisors under the
4 administration of President Gerald R. Ford. From 1969 to 1981, I was also the
5 Gordon S. Rentschler Professor of Economics at Princeton.

6 I am currently the Chemical Bank Chairman's Professor of Economics at
7 Princeton University. Prior to my appointment to this chair, I was the Dean at the
8 Yale University School of Management from 1981 to 1987. During my tenure as
9 Dean of the School of Management, I was concurrently the William S. Beinecke
10 Professor of Management at Yale.

11
12 **Q. DO YOU SERVE ON ANY BOARDS OR COMMITTEES?**

13 A. I am currently the Chairman of the New Products Committee of the American
14 Stock Exchange.

15 I also serve on the Boards of Directors of the following organizations:

- 16 • Prudential Financial Corporation (Chair, Investment Committee
17 and Finance Committee)
- 18 • The Vanguard Group of Investment Companies
- 19 • BKF Capital Corporation
- 20 • The Jeffrey Company

1 BKF Capital and the Jeffrey Company are both investment management
2 companies. As a Director, I am actively involved in advising these companies
3 regarding the investment returns that can be achieved from alternative equity and debt
4 securities. The Vanguard Group of Investment Companies manages over \$500 billion
5 of investment funds including the largest equity mutual fund in the world with assets
6 close to \$100 billion.

7 I serve on both the Board and the Investment Committee of Prudential
8 Financial Corporation. The Investment Committee approves all investments made by
9 Prudential. With assets under management of approximately \$550 billion, Prudential
10 is one of the largest financial intermediaries in the world and is actively involved in
11 purchasing and valuing equity securities. I also chair the finance committee that
12 approves all of Prudential's capital investments.

13
14 **Q. PLEASE OUTLINE YOUR WRITINGS WHICH ADDRESS CAPITAL**
15 **MARKETS AND INVESTMENTS.**

16 A. I have published widely in the field of finance, the valuation of stocks and
17 bonds, and the operation of the financial markets of the United States. My
18 curriculum vitae, attached as Exhibit No. __ (BGM-1), names the publications and
19 articles that I have authored as well as lists, in detail, my other professional
20 accomplishments, distinctions, and professional associations. My best known book,
21 *A Random Walk Down Wall Street*, presents an in-depth analysis of the investment

1 characteristics and valuation of stocks and bonds. I am currently preparing the 8th
2 edition of that book. One important area of my academic research has concerned
3 how securities prices are significantly determined by the expectations of Wall
4 Street securities analysts.

5
6 **Q. DO YOU CONSULT WITH INDIVIDUALS AND CORPORATIONS?**

7 A. I have served as a consultant to various companies and government agencies
8 including:

- 9 • Morgan Stanley & Company (now Morgan Stanley Dean Witter)
- 10 • Bear, Stearns & Company
- 11 • Price Waterhouse (now Pricewaterhouse Coopers)
- 12 • Board of Governors of the Federal Reserve System
- 13 • U.S. Securities and Exchange Commission
- 14 • Federal Reserve Bank of New York
- 15 • Emerging Communications, Inc.
- 16 • U.S. Department of Labor
- 17 • Pension Benefit Guaranty Corporation

18
19 **Q. PLEASE DISCUSS THE BASIS FOR YOUR OPINIONS IN THIS CASE.**

20 A. I am qualified to offer the opinions expressed herein based on my studies,
21 research, teaching and writing in the field of finance. In addition, I base my opinions

1 on my experience as an investment banker and trader in common stocks, my position
2 with the American Stock Exchange, my experience in advising the corporations on
3 whose boards I serve as a director and, in particular, on my service on the Investment
4 and Finance Committees of Prudential Financial Corporation and on the Board of
5 Vanguard, where we oversee the management of the equity mutual funds in the
6 Vanguard family of funds.

7 I have frequently been asked to consult and testify on matters concerning the
8 cost of capital for corporations. I have been employed in the past by American
9 Telephone and Telegraph, Southwestern Bell, The Association of American
10 Railroads, and Mountain States Telephone and Telegraph. I have written extensively
11 on matters concerning the cost of capital, including The Debt-Equity Combination of
12 the Firm and the Cost of Capital, Library of Congress Catalog Card No. 75-167962.

13 My opinions expressed herein are based on my analyses of the relevant
14 materials I and those under my supervision have reviewed to date coupled with my
15 years of teaching, writing, researching, consulting, and lecturing in the fields of
16 corporate finance, financial markets and investments. I may supplement, refine, or
17 revise my analyses as appropriate based on additional testimony, documents, or other
18 materials that may become available.

19
20 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

1 A. The purpose of my testimony is to express expert opinions on how the cost of
2 capital should be estimated. Specifically, on behalf of South Carolina Electric and
3 Gas Co. ("SCE&G"), my services were engaged to provide advice, counsel and
4 expert testimony on the following subjects:

- 5 1. The cost of equity capital for SCE&G.
- 6 2. The reasonableness of SCE&G's capital structure.
- 7 3. The overall fair rate of return for SCE&G.

8
9 **Q. WHAT KEY DOCUMENTS AND OTHER MATERIALS DID YOU**
10 **CONSIDER IN REACHING YOUR OPINIONS?**

11 A. The key materials used by me in my analysis are as follows:

- 12 • Annual reports of SCANA Corporation ("SCANA") and various
13 financial/business reports issued on SCANA during the past two
14 to three years.
- 15 • Various brokerage reports on electric and gas companies.
- 16 • Prepared Direct Testimony of Thomas R. Osborne, Managing
17 Director in the Global Energy and Power Group of UBS
18 Warburg LLC's Corporate Finance Division, filed on behalf of
19 SCE&G.

1 Q. ARE THERE ESSENTIAL STANDARDS THAT APPLY IN SETTING
2 PUBLIC UTILITIES' ALLOWED RATES OF RETURN?

3 A. Below I list the essential standards that apply in setting public utilities' allowed
4 rates of return. These standards emanate from the *Bluefield*¹ and *Hope*² decisions of
5 the United States Supreme Court. First, a utility should be allowed the opportunity to
6 realize earnings at a sufficient level so that it is able to attract capital at reasonable
7 cost. Second, a utility should be allowed the opportunity to realize earnings at a level
8 comparable to firms facing equivalent risk.

9
10 Q. WHAT FINANCE PRINCIPLES ARE IMPORTANT WHEN ESTIMATING
11 THE COST OF EQUITY CAPITAL FOR A COMPANY?

12 A. In the entire field of the economics of finance, the two most universally
13 accepted principles when estimating the cost of capital for a firm are the following:

14 a) A firm should undertake new investments in plant and equipment only
15 if the prospective return from these investments is at least equal to its
16 cost of capital funds.

17 b) Risk and return are related. Investors must be compensated for
18 investing in a company with higher than average risk by the promise of
19 higher than average return.

1 Bluefield v. Public Service Commission, et.al., 262 U.S. 679, 43 S.Ct. 675, 67 L.Ed. 1176, 1923 U.S.
LEXIS 2676 (1923)

2 Federal Power Commission, et.al. v. Hope Natural Gas Co., 320 U.S. 591, 64 S.Ct. 281, 88 L.Ed. 333,
1944 LEXIS 1204 (1944).

1 Both of these principles will play a key role in my testimony.

2
3 **Q. PLEASE EXPLAIN.**

4 **A.** The proposition that a firm should undertake investment decisions only if they
5 are equal to or greater than its cost of capital funds is a fundamental tenet of
6 corporation finance. A simple illustration, using an all-equity company, will help
7 demonstrate the validity of the principle. Suppose XYZ Company has \$1,000 of
8 invested capital on which it earns \$100 per year. Let us suppose in this basic
9 illustration that depreciation charges are sufficient to provide funds to maintain the
10 invested capital intact, and that the \$100 can all be paid out to shareholders in
11 dividends each year, in perpetuity. Assuming that the market values XYZ Company
12 at \$1,000 (market and book values are identical in this case), shareholders will receive
13 an annual return (yield) of 10 percent. (The \$100 in constant dividends divided by the
14 \$1,000 market value.) Thus, the shares are priced in the market to provide investors
15 with a 10 percent annual return. This market determined return is both the anticipated
16 rate of return to an investor in the company's shares and also the appropriate cost of
17 capital for the firm. If the company is being run in the interests of the shareowners, no
18 investment should be undertaken that yields less than the cost of capital, because such
19 an undertaking will make the shareholders worse off. Investments that yield more
20 than (the same as) the cost of capital will make the shareholders better off (just as
21 well off as before).

1 Suppose, for example, XYZ Company wanted to invest \$1,000 to double the
2 size of its plant and sold \$1,000 of new equity to accomplish the investment. If the
3 new plant produced an extra return of \$90/year (9 percent) total, yearly earnings for
4 XYZ Company would rise from \$100 to \$190. But if the general risk category of
5 XYZ Company was unchanged, as it would be if the new investment was of the same
6 type as the existing plant, then earnings of XYZ Company would continue to be
7 capitalized at 10 percent, producing a total market value of \$1,900 (\$190 times 10).
8 Note that this is less than the total amount of the original equity (\$1,000) plus the
9 \$1,000 of new equity sold. It follows that the shareholders were made worse off by
10 undertaking an investment that produced a rate of return less than the cost of capital.
11 If the new plant produced a yield of 11 percent, however, then \$110 of new earning
12 would be produced and the total value of the equity would rise to \$2,100 (\$210 times
13 10) and the shareholders would be better off. If an investment were undertaken that
14 yielded the same as the cost of capital (i.e., 10 percent), the shareowners would be
15 just as well off as before. This is why the cost of capital is often referred to as the
16 cut-off rate for judging new investments. No investment should be undertaken that
17 yields less than the cut-off cost of capital rate.

18 Another wholly equivalent way to look at the cost of capital is as an
19 “opportunity cost” rate. One alternative always open to the firm is the purchase of its
20 own shares or the shares of firms in an equivalent risk category, which can be
21 expected to provide the same (10 percent) rate of return. Thus, it would make no

1 sense for the firm to accept a project that yielded less than the “opportunity cost” of
2 investing funds in common stocks at the rate set by the market for similar risk
3 investments.

4
5 **Q. IS THE ANALYSIS THE SAME FOR BOTH REGULATED AND**
6 **UNREGULATED FIRMS?**

7 A. The cost of capital standard is no less applicable for regulated than for
8 unregulated companies. Since both kinds of companies must raise capital in a
9 competitive securities market, the regulated company can have no different cut-off
10 rate for investments than the unregulated company. Only if the regulated company
11 can earn the cost of capital rate on the investments it makes can the common
12 stockholders be assured of earning a competitive rate of return.

13 Should SCE&G not be allowed to earn the cost of capital rate, investments
14 needed to maintain, modernize, and expand the system will not be made by a
15 management interested in the welfare of its common stockholders. This would lead
16 to poor service for the customers served. Failure to earn the cost of capital on
17 invested funds will also lead to an inability to raise new capital in a freely
18 competitive capital market. Thus, even if the management wished to make the
19 necessary investments in the system, SCE&G will not be able to attract the necessary
20 capital to do so since investors would correctly anticipate that failure to earn the cost

1 of capital rate on its investment base would lead to a fall in the price of SCE&G's
2 securities.

3
4 **Q. HOW IS THE COST OF CAPITAL DETERMINED?**

5 A. While the principle is universally accepted that a firm should use the cost of
6 capital as the cut-off rate for investment projects, the actual measurement of capital
7 costs necessarily involves a considerable degree of judgment. Current debt costs (the
8 return to bond investors) can be measured easily since debt involves fixed-interest
9 payments as well as a fixed date for the repayment of principal. The more difficult
10 estimates concern the equity cost of capital. The equity cost of capital involves
11 finding the expected return to equity investors. But since the future earnings, and thus
12 expected dividend payments, can only be estimated, the measurement of the equity
13 cost of capital is more difficult. The usual methods employed to estimate the cost of
14 equity capital utilize the discounted cash flow principle.

15
16 **Q. PLEASE DESCRIBE HOW THE DISCOUNTED CASH FLOW METHOD**
17 **WORKS.**

18 A. The most direct method of estimating the equity cost of capital is to project the
19 future stream of earnings (and dividends) for the firm and then to find the discount
20 rate (yield rate) that equates the present (or discounted) value of the dividends to the

current market price of the shares. Consider the following two-period example: invest \$100 today and receive \$120 one year from today. We form the following equation:

$$\text{Investment Today} = \frac{\text{Repayment in one year}}{\text{Unity plus the interest (yield) rate}}$$

$$\$100 = \frac{\$120}{1+r}, \text{ where } r \text{ is the interest or yield rate.}$$

Solving the equation, we find that $r = .20$, or 20 percent.

Moneys to be received in two years are discounted by $(1+r)$ times $(1+r)$ or by $(1+r)^2$, in three years by $(1+r)^3$, and so forth. The method then is to project future returns to the equity investor and then find the discount or yield rate that makes the present (discounted) value of those returns equal to the market price of the shares.

In the illustration above, XYZ Company had a market value of \$1,000 and promised a perpetual stream of dividends equal to \$100. Thus, we form the equation:

$$\$1000 = \frac{\$100}{1+r} + \frac{\$100}{(1+r)^2} + \frac{\$100}{(1+r)^3} + \dots + \frac{\$100}{(1+r)^n}$$

The solution to this equation (n going to infinity) is $r = .10$ (10 percent). The rate of return in this no growth case is simply the earnings/price, which in this case equals the dividends price ratio.

Normally, dividend payments can be expected to grow over time. Assuming a constant growth rate, and assuming that dividends are paid annually at the end of the year, we may write:

$$P = \frac{D_0(1+g)}{(1+r)} + \frac{D_0(1+g)^2}{(1+r)^2} + \dots + \frac{D_0(1+g)^N}{(1+r)^N}, \text{ where}$$

P = the market prices of the shares,

D_0 = the dividend paid in the preceding year,

g = the (constant) growth rate of the dividend, and

r = the discount rate.

Allowing n , the number of periods, to go to infinity, the solution of this equation takes the form:

$$r = \frac{D_0(1+g)}{P} + g$$

The rate of return to investors from buying the shares at price P is simply the dividend yield (based on the dividend expected for the next year) plus the expected long-term growth rate of dividends. Thus, the cost of equity capital can be estimated as the sum of the dividend yield and the expected growth rate. This formula holds not only for dividend growth at a constant long-term rate, but also shorter-term dividend growth as long as the price-earnings ratio of the shares is the same at the end of the period as it is at the beginning. This model is often referred to as the “Gordon Model” after Professor Myron Gordon of the University of Toronto.

It is possible to write other formulas where dividend growth proceeds at different rates from period to period, or where the price-earnings ratio of the shares is assumed to change over time. The principle is always the same, however. The estimation of the cost of equity capital involves fundamentally a projection of

1 earnings and dividend growth and solving for the rate of return. While it is possible
2 to estimate future growth by simply extrapolating using historical growth rates, it is
3 preferable to use the forecasts of Wall Street security analysts for long-run growth.
4 My own empirical work found that price-earnings multiples are more closely related
5 to expected growth rates than they are to extrapolations of past growth.³ All leading
6 textbooks in finance support the use of the technique described above to estimate the
7 equity cost of capital.

8 One problem with the Gordon model is that it can produce unrealistically high
9 estimates of the return on equity when forecasted growth rates are very high. The
10 problem is that it is not realistic to project very high rates of growth (well above the
11 growth rate of Gross Domestic Product) (GDP) for long periods of time. The life
12 cycle of companies is typically that the very high rates of growth that characterize the
13 early period in a firm's history typically decline in later periods if for no other reason
14 than the fact that very high growth rates of sales and earnings are much harder to
15 achieve on a larger base.

16 In general, however, the Gordon model does work well for public utilities
17 where forecasted growth rates are generally in the vicinity of the growth rate for
18 GDP. Historical growth rates for nominal GDP have generally been in the vicinity of
19 seven percent. Some analysts believe that future long term GDP growth rates could

3 For an analysis of these results done on a sample of public utility equities, see Burton G. Malkiel, "The Valuation of Public Utility Equities," The Bell Journal of Economics and Management Sciences, Vol. 1, No. 1, Spring 1970. See also John Cragg and Burton G. Malkiel, Expectations and the Structure of Share Prices, (University of Chicago Press, 1982) for results done on a larger sample of companies.

1 exceed seven percent if recent excellent productivity results continue for the
2 economy in general. My own experience and study supports the view that future
3 GDP growth rates could exceed seven percent; consequently, I am of the opinion that
4 high single digit forecast rates from earnings and dividend growth are reasonably
5 consistent with overall economic growth. Based upon these factors, I believe that the
6 Gordon model is well suited for estimating capital costs in this case, and, therefore, I
7 will use the Gordon model as the basis for my equity cost of capital estimates.
8

9 **Q. WHAT PART DOES RISK PLAY IN APPLYING THIS METHODOLOGY?**

10 A. Risk plays an important role in applying this methodology. As mentioned
11 above, a tenet of modern finance is that risk and return are related. Higher rates of
12 return are required to induce investors to hold risky assets. Exhibit No. __ (BGM-
13 2) presents data from Ibbotson Associates showing historical returns for various
14 assets since 1926. We note that stocks of large companies have generated returns
15 of 10.7 percent per year while stocks of smaller (and thus considered riskier)
16 companies have returned close to 12 ½ percent. This compares with returns of 5.8
17 percent for safer corporate bonds and 5.3 percent for default-free long-term U.S.
18 Treasury bonds. On average, the companies considered comparable to SCE&G
19 must have a risk level that is approximately the same.
20

1 Q. HOW DID YOU APPLY THE DISCOUNTED CASH FLOW
2 METHODOLOGY TO ESTIMATE THE COST OF EQUITY CAPITAL IN
3 THIS CASE?

4 A. I applied the discounted cash flow methodology to estimate the cost of
5 equity capital in this case in the following manner: Were SCE&G a stand-alone
6 company whose stock was traded in the public market, we could estimate its cost
7 of equity capital directly using the dividend plus growth methodology described
8 above. But SCE&G is a subsidiary of a larger company, SCANA; hence, we need
9 to find comparable companies of roughly the same size and risk class and facing
10 the same kind of competition.

11 Unfortunately, there are no perfectly comparable companies to SCE&G.
12 What we can do, however, is show the range of expected total return (cost of equity
13 capital) numbers for a wide variety of electric and gas companies that are roughly
14 comparable to SCE&G.

15 In order to obtain a sample of comparable utilities, I asked Thomas R.
16 Osborne, Managing Director of the Global Energy and Power Group of UBS
17 Warburg to obtain such a list for me. The companies he chose, which I agree are in
18 fact comparable, are listed below in Table 1.

Table 1

**Osborne Sample of Companies Comparable to
South Carolina Electric and Gas**

Company Name	Ticker Symbol	Equity Market Value¹ (\$mm)
DPL Inc.	DPL	2,309
Energy East	EAS	2,379
Great Plains Energy	GXP	1,225
IDACORP, Inc.	IDA	952
NSTAR	NST	2,241
Pinnacle West Capital Corp.	PNW	2,803
Vectren Corp.	VVC	1,573

¹ Source: SEC Filings, As of 8/1/02

Source: Thomas R. Osborne, UBS Warburg

Q. PLEASE DISCUSS THE ESTIMATES FOR A SAMPLE OF COMPARABLE COMPANIES.

A. I believe we can obtain a reasonable estimate of the required equity rate of return for SCE&G by examining a group of companies in similar business and with similar regulatory oversight and risk levels. I therefore used the so-called Gordon model to derive equity cost of capital estimates for the Osborne sample of comparable public utilities. The estimates are presented in Table 2 below.

Table 2

Cost of Equity Capital
Estimates for Osborne Sample of Comparable Companies
Data from August 1, 2002

Company Name	Dividend Yield (%)	I/B/E/S Estimated Long-term Growth (%)	FirstCall Long-term EPS Growth (%)	Estimate of Equity Cost of Capital (%)		
				I/B/E/S	First Call	Average
DPL Inc.	5.2	7.5	7.0	12.7	12.2	12.5
Energy East	4.7	6.8	6.0	11.5	10.7	11.1
Great Plains Energy	8.4	4.7	4.0	13.1	12.4	12.8
IDACORP, Inc.	7.3	8.0	8.0	15.3	15.3	15.3
NSTAR	5.0	6.4	7.0	11.4	12.0	11.7
Pinnacle West Capital Corp.	4.8	6.6	6.0	11.4	10.8	11.1
Vectren Corp.	4.6	7.7	7.0	12.3	11.6	12.0

Average for Comparable Companies

12.35

Note from Table 2 that my cost of equity capital estimates (without flotation costs) for a comparable set of energy utilities cluster reasonably closely around an average of 12.3 percent. The set of companies is comparable in size and capital structure to SCE&G.

Q. DID YOU DO ANY CHECK OF THE REASONABLENESS OF YOUR COST OF EQUITY CAPITAL ESTIMATE?

A. As a check of the reasonableness of my estimate of the cost of equity capital for the Osborne set of comparable companies, I did a similar analysis for the set of much larger gas and electric utilities shown in Table 3 below.

Table 3

Sample of Large Gas and Electric Utilities

Company Name	Symbol	Equity Market Value¹ (\$mm)
American Electric Power	AEP	11,303
Consolidated Edison	ED	8,952
Dominion Resources	D	16,706
Duke Energy	DUK	20,687
Exelon Corp.	EXC	15,476
FPL Group, Inc.	FPL	9,937
Progress Energy	PGN	10,192
Southern Company	SO	19,909

¹ July 26, 2002

These companies have an equity market value approximately five times the value of the Osborne set of companies comparable to SCE&G, and, therefore, I would expect that the required cost of equity capital would be lower than for the Osborne sample. As data from Ibbotson Associates has clearly shown, the rate of return for the stocks of smaller companies over the past 75 years has exceeded that of larger companies by approximately 1.7 percentage points. My summary estimates for the required equity rates of return for the companies in Table 3 are set forth in Table 4 below:

Table 4

Average Dividend Yield	Average Estimated Long term Growth Rate		Estimate of Equity Cost of Capital	
	I/B/E/S Data	First Call Data	I/B/E/S Data	First Call Data
4.83	7.0	6.9	11.83	11.73

1 By averaging the estimates from I/B/E/S and First Call data, we obtain an equity cost
2 of capital estimate of 11.8 percent, only 1/2 of one percent less than my estimate for
3 the Osborne sample. As expected, while this estimate is lower than the estimate for
4 the Osborne sample, it is very close to the estimates derived from the set of much
5 smaller companies. This analysis suggests that my cost of equity capital estimate of
6 12.3 percent for SCE&G is both reasonable and wholly consistent with market
7 conditions during the summer of 2002.

8
9 **Q. BASED UPON THE ABOVE ANALYSIS, WHAT IS THE APPROPRIATE**
10 **EQUITY COST OF CAPITAL FOR SCE&G?**

11 A. As Table 2 shows, estimates of the cost of equity capital for a group of
12 companies comparable to SCE&G is 12.3 percent. I believe that the risk level of
13 these comparable companies is no different from SCE&G and the capital structures
14 of the companies is essentially the same. Thus, I believe that a 12.3 percent
15 average required equity rates of return that I have estimated for these companies
16 comprises a reasonable estimate for SCE&G before consideration of the
17 transactions costs required to raise new capital.

18 The analysis of cost of capital for the much larger gas and electric utilities,
19 considered to have lower risks than SCE&G, establishes that the range of
20 reasonableness of capital costs for SCE&G cannot be less than 11.8 percent before
21 consideration of the transaction costs required to raise new capital. Because it is clear

1 that the market will impose greater capital costs on smaller companies considered to
2 be more risky like SCE&G and those companies to which it is comparable, I estimate
3 that SCE&G's capital cost is at least 20 basis points above this level, or a minimum of
4 12.0 percent, before consideration of the transaction costs required to raise new
5 capital.

6
7 **Q. WHAT IS THE COMPANY'S CAPITAL STRUCTURE?**

8 A. SCE&G's current capital structure, giving effect to the planned issuance of
9 securities later in 2002, consists of approximately 51.56 percent common equity and
10 48.44 percent fixed rate senior securities. It is my opinion that this capital structure is
11 within a zone of reasonableness. In fact, highly leveraged capital structures in today's
12 market will likely limit a utility's ability to raise new capital. I believe SCE&G's
13 capital structure to be prudent and to be within a reasonable zone permitting it to raise
14 new equity capital at market rates for the benefit of its ratepayers and shareholders.

15
16 **Q. WHAT IS THE COMPANY'S COST OF LONG-TERM DEBT?**

17 A. As of June 30, 2002, SCE&G's weighted average embedded cost of long-term
18 debt is 7.2 percent. In my opinion, it is accepted practice to use the company's
19 current cost of debt in the calculation, although I believe that SCE&G would
20 undoubtedly be required to pay more than the 7.2 percent to raise new debt capital
21 under current market conditions.

1 **Q. BASED UPON THE COMPANY'S CAPITAL STRUCTURE, ITS COST OF**
2 **LONG-TERM DEBT, AND YOUR DETERMINATION OF A FAIR AND**
3 **REASONABLE COST OF EQUITY CAPITAL, WHAT IS A REASONABLE**
4 **OVERALL RATE OF RETURN FOR SCE&G?**

5 A. Based upon the company's capital structure, its cost of long-term debt⁴, and
6 my determination of a fair and reasonable cost of equity capital, a reasonable rate
7 of return (prior to consideration of flotation costs required to raise new capital) for
8 SCE&G is shown in Table 5 below:

9 **Table 5**

10
11 Fair and Reasonable
12 Rate of Return
13

	Ratio	Cost	Overall Cost
Long-term Debt	48.44%	7.2%	3.5%
Common Equity	51.56%	12.3%	6.3%
Total	100.0%		9.8%

14
15
16 **Q. SHOULD ANY ADJUSTMENT BE MADE FOR THE FLOTATION COSTS**
17 **OF ISSUING NEW SECURITIES?**

18 A. Yes, I believe an adjustment should be made. I have asked for the
19 projected next three-year forecast of cash flows for SCE&G and have reviewed
20 such a forecast from the company. The forecast shows that cash flow from
21 operations will be inadequate to meet capital expenditure, dividend, and bond

4 As used in this answer and in Tables 5, 6, 7 and 9, the terms "long term debt" and "cost of debt capital" include long term debt and preferred stock which, like debt, is a fixed rate obligation.

servicing requirements. Hence, SCE&G is forecasting that it will be required to raise both equity and debt external financing. Indeed, the company has recently announced plans for new issues of securities in the near future.

Q. HOW SHOULD THE COST OF CAPITAL ESTIMATES BE ADJUSTED IN THE PRESENCE OF FLOTATION COSTS FOR EXTERNAL FINANCING?

A. Let me return to the illustration I used in pages 8 to 10 above. Recall that XYZ Company had a 10 percent cost of capital, was financed entirely with equity, and was planning to double its capacity by raising \$1000 in new equity. We calculated that the cost of capital, 10 percent, was appropriate and that if the new capacity earned \$100 per year (10 percent), the stockholders would be just as well off as before. But now suppose that flotation costs (underwriting costs, market price discounts to raise new capital, fees, etc.) were 4 ¼ percent so that if \$1000 gross amounts were raised, the company would receive a net amount of only \$957.50. Note that now the appropriate cut off rate for new investment is not 10 percent but rather 10.44 percent calculated as follows:

$$\frac{\text{Earnings Needed To Make Stockholders As Well Off As Before}}{\text{Net Amount Raised}} = \frac{\$100}{\$957.50} = 10.44\%$$

A similar calculation would be required for the debt cost of capital if new debt is to be raised.

1 **Q. ADJUSTING FOR FLOTATION COSTS, WHAT IS YOUR**
2 **DETERMINATION OF THE COST OF CAPITAL FOR SCE&G?**

3 A. Table 6 below shows my estimates assuming 4 ¼ percent flotation costs⁵
4 and 100 percent external financing. Please note that while I have used SCE&G's
5 projected costs for the new issue of common stock in my flotation calculations, my
6 experience teaches that the estimate of 4¼ percent is remarkably low and
7 conservative. Further, SCE&G's estimate of flotation costs does not recognize the
8 discounting that normally occurs in the market in order to have the new issue fully
9 subscribed. Actual flotation costs are likely to run between 5 percent and 6 percent
10 or higher when market discounts are considered. Consequently, my use of
11 SCE&G's estimate of 4¼ percent is quite conservative and produces a conservative
12 estimate of SCE&G's cost of equity capital inclusive of flotation costs.

13
14 **Table 6**

15 **Cost of Capital Before and After Flotation Costs**
16
17

	Before Flotation Costs	After Flotation Costs
Cost of Equity Capital	12.3%	12.8%
Cost of Debt Capital	7.2%	7.5%
Weighted Average Cost of Capital	9.8%	10.2%

18
19

5 I used 4 ¼ percent based upon information received from SCE&G, namely, that underwriting and investment banking fees were expected to be 4.0 percent and other costs (legal, accounting, printing, etc.) were estimated to be ¼ percent, for a total of 4 ¼ percent.

1 The numbers in the last column of Table 6 are an upper bound for SCE&G's cost
2 of capital since the company's capital requirements will be met in part from
3 internal sources of funds (earnings, depreciation allowances, etc.) According to
4 SCE&G's estimates, about half of the company's capital requirements will be met
5 with external financing during the years 2002 and 2003. Some external financing
6 is required in 2004. On average over the three years, about 3/8 of the funds
7 required will come from external sources. Hence, my estimate for SCE&G's cost
8 of capital including flotation costs is shown in Table 7 below.

9
10 **Table 7**

11 Cost of Capital (including flotation costs)

12

13

Cost of Equity Capital	12.5%
Cost of Debt Capital	7.3%
Weighted Average Cost of Capital	9.9%

14

15

16 Similarly, if we apply transaction costs required to raise new capital to my analysis
17 of the cost of capital for the much larger gas and electric utilities, with lower risks
18 than SCE&G, we establish that the lower end of the range of reasonableness of
19 equity capital costs for SCE&G cannot be less than 12.2 percent, including
20 flotation costs.

21

22 **Q. YOU HAVE ESTIMATED THAT SCE&G'S COST OF EQUITY CAPITAL**

23 **WITHOUT FLOTATION COSTS IS 12.3 PERCENT AND WITH**

1 **FLOTATION COSTS IS 12.5 PERCENT. PLEASE PLACE THESE POINT**
2 **ESTIMATES INTO A RANGE OF REASONABLENESS.**

3 A. As indicated earlier, estimates of the cost of equity capital require the
4 exercise of judgment. Hence, my estimate of 12.3 percent before flotation costs
5 and 12.5 percent after flotation costs should probably be considered the mid-point
6 of a range of reasonable estimates.

7 In judging whether the equity cost of capital could be lower than 12.3
8 percent before flotation costs, I would refer to Table 4 showing that a group of
9 much larger gas and electric utilities appear to have required equity rates of return
10 of 11.8 percent, somewhat below the Osborne group of comparable companies. I
11 believe therefore that 11.8 percent is an absolute minimum cost of equity capital for
12 gas and electric utilities and in my judgment 12.0 percent is most probably the
13 effective minimum for a smaller company such as SCE&G. In my view it is
14 equally likely that SCE&G's equity cost of capital is 30 basis points higher than
15 my 12.3 percent estimate (without consideration of flotation costs). Hence the
16 range of estimates that I believe most likely encompasses SCE&G's required
17 equity rate of return (equity cost of capital) is given by the ranges in Table 8 below:

18 **Table 8**

19
20 **Range of Reasonableness of Cost of Equity Capital**

21

	Without Flotation Costs	With Flotation Costs
Top of Range	12.6%	12.8%
Mid-Point	12.3%	12.5%
Bottom of Range	12.0%	12.2%

1 **Q. DO YOU BELIEVE THAT A RANGE OF RATES OF RETURN IS**
2 **PREFERABLE TO A SINGLE POINT RETURN RATE? IF SO, PLEASE**
3 **EXPLAIN AND SHOW THE RANGE OF RATES OF RETURN YOU**
4 **BELIEVE TO BE FAIR AND REASONABLE FOR SCE&G.**

5 **A.** I believe a range of returns is in fact preferable. Establishing a single
6 point for SCE&G's overall return can be done, but it is very unlikely that the
7 company will earn precisely at that level. More likely than not, the company will
8 earn above or below the point determined to be the fair rate of return, depending
9 upon a host of factors including general economic conditions, growth within the
10 company's service area, weather, and other unforeseen conditions. A good practice
11 therefore is to establish a range of reasonable returns using the range of equity
12 capital costs determined to be the most appropriate for the company. Using my
13 estimates of SCE&G's equity cost of capital, and considering flotation costs, the
14 appropriate range of fair rates of return is shown in Table 9 below:

Table 9

**Range of Fair and Reasonable
Rates of Return**

Low End of Range (with flotation costs)

	Ratio	Cost	Overall Cost
Long-term Debt	48.44%	7.3%	3.5%
Common Equity	51.56%	12.2%	6.3%
Total	100.0%		9.8%

Mid Point of Range (with flotation costs)

	Ratio	Cost	Overall Cost
Long-term Debt	48.44%	7.3%	3.5%
Common Equity	51.56%	12.5%	6.4%
Total	100.0%		9.9%

High End of Range (with flotation costs)

	Ratio	Cost	Overall Cost
Long-term Debt	48.44%	7.3%	3.5%
Common Equity	51.56%	12.8%	6.6%
Total	100.0%		10.1%

In summary, my determination of fair and reasonable rates of return for SCE&G, using its actual capital structure, my estimates of the cost of equity capital and the flotation costs associated with raising new capital, range from a low of 9.8 percent to a high of 10.1 percent.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes.

August 2002

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Education

1943-1949	Boston Latin School
1949-1953	Harvard College, BA, June 1953
1953-1955	Harvard Graduate School of Business Administration, MBA, June 1955
1960-1964	Princeton University, Ph.D., January 1964

Military Service

1955-1958	First Lieutenant in the Finance Corps of the U.S. Army
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Business Career

1958-1960	Associate in the Investment Banking Department of the Wall Street investment banking firm of Smith Barney & Company
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Government Service

1975-1977	Member, Council of Economic Advisors
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Academic Career

1964-1966	Assistant Professor, Economics Department, Princeton University
1966-1981	Director, Financial Research Center, Princeton University
1966-1968	Associate Professor, Economics Department, Princeton University
1968-1981	Professor, Economics Department, Princeton University
1969-1981	Gordon S. Rentschler Memorial Professor

1974-1975	Chairman, Economics Department, Princeton University
1977-1981	Chairman, Economics Department, Princeton University
1981-1988	Dean, Yale School of Organization and Management and William S. Beinecke Professor of Management Studies
1988-	Professor, Economics Department, Princeton University Chemical Bank Chairman's Professorship

Professional Posts

Director, The Vanguard Group of Investment Companies
Director, The Vanguard Group (Ireland) Limited
Director, Prudential Insurance Company of America
Director, BKF Capital Group
Director, NeuVis Corporation
Director, The Jeffrey Company
Investment Committee, Pew Charitable Trusts
Chairman, New Products Committee, American Stock Exchange
Editorial Board Member, *Emerging Markets Review* and *Applied Financial Economics*

Memberships

American Finance Association (President, 1978)
American Economic Association
Various government and non-government advisory panels

Awards, Honors

Third Annual Bernstein Fabozzi/Jacobs Levy Award, *Journal of Portfolio Management*, volume year 2000-2001
Smith Breeden Prize for best article in the *Journal of Finance*, 2001
Elected Member, American Philosophical Society, 2001
Honorary Doctor of Humane Letters Degree from the University of Hartford, June 1971
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Harvard Business School Alumni Achievement Award for 1984

Published Books

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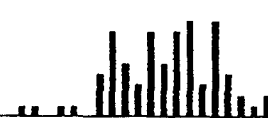
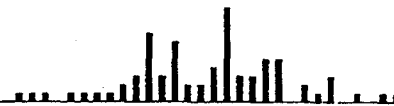
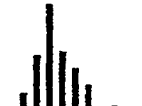
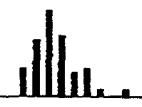
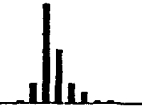


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**Basic Series: Summary Statistics
Of Annual Total Returns
From 1926 to 2001**

from 1926 to 2001

Series	Geometric Mean	Arithmetic Mean	Standard Deviation	Distribution
Large Company Stocks	10.7%	12.7%	20.2%	
Small Company Stocks	12.5	17.3	33.2	 *
Long-Term Corporate Bonds	5.8	6.1	8.6	
Long-Term Government	5.3	5.7	9.4	
Intermediate-Term Government	5.3	5.5	5.7	
U.S. Treasury Bills	3.8	3.9	3.2	
Inflation	3.1	3.2	4.4	

-90%

0%

90%

*The 1933 Small Company Stocks Total Return was 142.9 percent.

Source: Ibbotson Associates